

## CLAIMS

1. Diaphragm transducer comprising

- a planar diaphragm (100),

5 - magnets (102) arranged to provide magnetic field (104) strength through said in-a planar region diaphragm (100),

- said magnets (102) being in magnetic interaction with a magnetically conducting material (106, 106', 107, 107'),

- said magnets (102) being arranged on one side of said diaphragm (100),

10 - said magnets are arranged behind said planar diaphragm in magnetic interaction with a magnetically conducting material, where the magnetically conducting material is not a permanent magnet, to conduct magnetic field from said magnets to said planar region, - said diaphragm (100) having a plurality of conductors (108) on its planar surface for inducing electromagnetic force acting on said conductors (108) when current flows through said conductors (108),

characterised in that

20 - that said magnets (102) are in magnetic interaction with a magnetically conducting material (106, 106', 107, 107') to conduct magnetic field (104) strength from said magnets (102) to said diaphragm (100),

- that said magnetically conducting material (106, 106', 107, 107') is not a permanent magnet, and said planar diaphragm located in said planar region and parallel with said planar region, said diaphragm having a plurality of conductors on its planar surface for inducing electromagnetic forces acting on these conductors in said planar region when current flows through said conductors

25 - that -

said conductors (108) on said diaphragm (100) are arranged in a pattern in relation to said magnetic field (104) strength through said diaphragm (100), said relation being such that said electromagnetic force acting on said conductors (108) is directed substantially normal to said surface of said planar diaphragm (100).

2. Diaphragm transducer according to claim 1, characterised in that said conductors (108) are arranged in a pattern with varying mutual distances and directions.

5 3. Diaphragm transducer according to claim 1 or 2, characterised in that said magnetic field (104) in said planar region through said diaphragm (100) is approximately constant.

10 4. Diaphragm transducer according to any one of the claims 1 - 3, characterised in that said magnetically conducting material (106, 106', 107, 107') is configured as plates, between which permanent magnets (102) are located, where one edge of each of said plates constitutes a magnetic pole for providing field strength through said diaphragm (100).

15 ~~2. Diaphragm transducer according to claim 1, characterised in that said magnetically conducting material is soft iron~~

~~3. Diaphragm transducer according to claim 1 or 2, characterised in that said magnetic field in said planar region is approximately constant.~~

20 ~~4. Diaphragm transducer according to claim 1 - 3, characterised in that said magnetically conducting material is configured as plates, between which permanent magnets are located, where one edge of each of said plates constitutes a magnetic pole in said configuration.~~

25 5. Diaphragm transducer according to claim 4, characterised in that the number of poles are at least three with two outer poles (106, 106') and at least one inner pole (107).

30 6. Diaphragm transducer according to claim 5, characterised in that said number of inner poles located between the outer poles (106, 106') is at least two, where said inner poles (107, 107') are arranged in pairs of poles with a distance (103) between the two plates (107, 107') constituting said pair.

7. Diaphragm transducer according to claim 6, characterised in that said distance (103) between ~~said the~~ two plates (107, 107') constituting a pair of poles, is between 0.1 and 3 mm, preferably between 0.3 and 1.5 mm and preferably between 0.4 and 0.6 mm.

8. Diaphragm transducer according to any one of the claims 1-7, characterised in that said magnetically conducting material (106, 106', 107, 107') is soft iron

~~8. Diaphragm transducer according to claim 1-7, characterised in that said conductors are oriented and connected such that, when current flows through said conductors, said electromagnetic forces acting on said conductors in said planar region are approximately in the same direction.~~

9. Diaphragm transducer according to any one of the - claims 1- - 8, characterised in that said diaphragm (100) comprises a magnetically conducting layer.

10. Diaphragm transducer according to claim 9, characterised in that said magnetically conducting layer (106, 106', 107, 107') comprises at least one from the group consisting of a coating with soft iron and a coating with Permalloy.

add 9.1